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ABSTRACT

Boise State University, Idaho, now has a better idea how well entering freshmen perform in reading, writing, and mathematics because of an Academic Profile instrument administered to freshmen at Boise State and other institutions. In general, Boise State students performed somewhat below other freshmen. The testing was initiated in response to the recommendation by the Northwest Commission on Accreditation that Boise State conduct more assessment of student learning in core classes. This report is based on the Academic Profile results for 623 entering freshmen. The mean total score was 439.27, which places entering Boise State freshmen in the 38th percentile compared with freshmen at other comprehensive colleges and universities. These data can serve as benchmarks of skill levels. Retesting students after they have completed most of their core requirements will show student academic growth. An appendix describes proficiency levels for the Academic Profile. (SLD)

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Research Reports

Institutional Assessment
Boise State University

Academic Profile Results for Entering Freshmen

Research Report 2002 - 03
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May 2002

Academic Profile Results for Entering Freshmen

Boise State now has a better understanding of how well entering freshmen perform in reading, writing, and mathematics. Results from the Academic Profile provided information about proficiency levels in these areas, as well as data to compare BSU freshmen to freshmen enrolled at other comprehensive colleges and universities. In general, Boise State students scored somewhat below other freshmen.

The testing was initiated in response to the recommendation by the Northwest Commission on Accreditation that Boise State University conduct more assessment of student learning in general education (core) classes. Early in the fall 2001 semester, approximately 1,000 students in randomly selected classes of English 090, 101 and 102 took the Academic Profile. This report is based on the 623 new entering freshmen.

The Academic Profile is a 50-minute test of general academic knowledge and skills. It includes material usually covered in courses taken during the first two years of college – the "core curriculum." The test measures college-level reading, critical thinking, writing and mathematics through questions from three academic areas: humanities, social sciences, and natural sciences.

The total score is reported on a scale that ranges from 400 to 500 and is based on all of the questions. The mean total score of the 623 entering freshmen tested was 439.27, with a standard deviation of 16.65. The national mean was 444.6, with a standard deviation of 18.2. This places the tested BSU entering freshmen in the 38th percentile compared to freshmen at other comprehensive colleges and universities.

HE 036 151

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Skills Subscores for entering freshmen at Boise State and nationally

Four skills subscores are reported. Each of these subscores refers to a particular skill dimension: critical thinking, college-level reading, college-level writing, or mathematics. Each skills sub-score is based on one-fourth of the questions and is on a scale that ranges from 100 to 130. Because Boise State students took the short form of the test, individual subskills scores are not available because the number of questions on each short form that contribute to each sub score is too small for accurate estimation of the student's proficiency. Instead, the mean subskills scores of all of the tested entering freshmen were determined and are included in the table below.

Table 1. Skills subscores for freshmen at Boise State and Nationally

Skills Subscores	BSU Mean Score	BSU Standard Deviation	National Mean	National Standard Deviation
Critical Thinking	109.49	5.74	110.3	1.9
Reading	117.42	6.96	117.4	2.3
Writing	113.34.	4.82	114.9	1.7
Mathematics	112.38	5.18	114.1	2.2

These results show that the BSU entering freshmen scored close to the national norm in critical thinking and reading, but further below the national norm in writing and especially mathematics.

Context-based Subscores

Three context-based scores were also provided. Each of these subscores refers to reading and critical thinking skills in three academic contexts: Humanities, Social Sciences, and Natural Sciences. The questions reflected in these subscores did not test specific course content nor specific subject matter knowledge, but rather the student's ability to use reading and critical thinking skills within different contexts. The subscores are based on one-third of the reading and critical thinking questions and are on a scale that ranges from 100-130. Again, only the mean subscores for all of the students were available due to the small number of questions on the test. (See table 2 below.)

Table 2. Context-based subscores for entering freshmen at Boise State and nationally

Context-based Subscores	BSU Mean Score	BSU Standard Deviation	National Mean	National Standard Deviation
Humanities	113.74	5.98	114	2.0
Social Sciences	112.37	6.14	113	1.8
Natural Sciences	113.69	5.49	115.4	2.0

These scores show that the entering freshmen scored below the national norm in all three academic contexts. Students scored closest to the national norm in humanities, but further below the national norm in social sciences and natural sciences.

Although the numerical scale is the same for all seven subscores, the scores are not comparable across categories. For example, a score of 115 in Humanities is not comparable to a 115 in Social Sciences or Writing.

Proficiency levels

The skills measured by the Academic Profile are grouped, within categories of skills, into proficiency levels--three proficiency levels for writing, three for mathematics, and three for a combined set of skills involved in reading and critical thinking. Each proficiency level is defined in terms of a set of specific competencies expected of students.

Level 1 tasks involve lower-level skills such as understanding or recognizing more explicit, straightforward and/or simple concepts. At levels 2 and 3 students are tested on higher-level skills such as synthesizing and evaluating more implicit and complex concepts. The tasks evaluated at each level in the three areas are included in Appendix A.

The table below shows the estimated percentages of students who are proficient, marginal and not proficient at each level in reading and critical thinking, in writing and in mathematics. A student classified as marginal is one whose test results did not provide enough evidence to classify the student either as proficient or as not proficient.

Table 3. Percentages of Boise State freshmen at each proficiency level

	Proficiency Classification		
Skill Dimension	**Proficient**	**Marginal**	**Not Proficient**
Reading/Critical Thinking, Level 3	2%	8%	90%
Reading, Level 2	28%	21%	51%
Reading, Level 1	60%	23%	17%
Writing, Level 3	6%	19%	75%
Writing, Level 2	11%	35%	54%
Writing, Level 1	56%	30%	14%
Mathematics, Level 3	2%	11%	87%
Mathematics, Level 2	18%	30%	51%
Mathematics, Level 1	47%	33%	20%

These results show that BSU freshmen were most proficient overall in reading and least proficient overall in mathematics. Students were overall less proficient in writing than in reading.

but more students were proficient at the highest level of writing than the highest level of reading (Level 3).

Results from the test provide two important pieces of information. First, Boise State results can be compared to national norms. Secondly, the data serve as a benchmark to identify entering skill levels of our students. Re-testing students after they completed most of their core requirements will provide a comparison to their entering level of skills.

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Appendix A:
Proficiency Levels
Reading/Critical thinking

Level 1

At level 1, a student can:

- Recognize factual material explicitly presented in a reading passage.
- Understand the meaning of words or phrases in the context of a reading passage.
- Understand the meaning of words or phrases in the context of a reading passage.

Level 2

At level 2, a student can:

- Synthesize material from different sections of a passage.
- Recognize valid inferences derived from material in the passage.
- Identify accurate summaries of a passage or of significant sections of the passage.
- Understand and interpret figurative language.
- Discern main idea, purpose, or focus of a passage or of a passage or a significant portion of a passage.

Level 3

At level 3, a student can:

- Evaluate competing casual explanations.
- Evaluate hypotheses for consistency with known facts.
- Determine the relevance of information for evaluating an argument an argument or conclusion.
- Determine whether an artistic interpretation is supported by evidence contained in a work.
- Recognize the salient features or themes in a work of art.
- Evaluate the appropriateness of procedures for investigating a question of causation.
- Recognize flaws and inconsistencies in an argument.

Writing Skills

Level 1

At a level 1, a student can:

- Recognize agreement among basic grammatical elements (e.g. nouns, verbs, pronouns, conjunctions).
- Recognize appropriate transition words.
- Recognize incorrect word choice.
- Order sentences in a paragraph.
- Order elements in an outline.

Level 2

At a level 2, a student can:

- Incorporate new material into a passage.
- Recognize agreement among basic grammatical elements (e.g. nouns verbs, pronouns, conjunctions) when these elements are complicated by intervening words or phrases.
- Combine simple clauses into single, more complex combinations.
- Recast existing sentences into new syntactic combinations.

Level 3

At a level 3, a student can:

- Discriminate between appropriate and inappropriate uses of parallelism.
- Discriminate between appropriate and inappropriate uses of idiomatic language.
- Recognize redundancy.
- Recognize the most effective revision of a sentence.

Mathematics Skills

Level 1

At a level 1, a student can:

- Solve word problems that would most likely be solved by arithmetic and do not involve conversion of units or proportionality. These problems can be multi-step if the steps are repeated rather then embedded.
- Solve problems involving the informal properties of numbers and operations, often involving the Number Line, including positive and negative numbers, whole numbers and fractions (including conversions of common fractions to percents, such as converting ¼ to 25%).
- Solve problems requiring a general understanding of square roots and the squares of numbers.
- Solve a simple equation or substitute numbers into an algebraic expression.

- Find information from a graph. This task may involve finding a specified piece of information in a graph that also contains other information.

Level 2

At level 2, a student can:

- Solve arithmetic problems with some complications, such ascomplex wording, maximizing or minimizing, and embedded ratios. These problems include algebra problems that can be solved by arithmetic (the answer choices are numeric).
- Simplify algebraic expressions, perform basic translations, and draw conclusions from algebraic equations and inequalities. These tasks are more complicated than solving a simple equation, though they may be approached arithmetically by substituting numbers.
- Interpret a trend represented in a graph, or choose a graph that reflects a trend.
- Solve problems involving sets; the problems would have numeric answer choices.

Level 3

At level 3, a student can:

- Solve word problems that would unlikely be solved by arithmetic; the answer choices are either algebraic expressions or are numbers that do not lend themselves to back-solving.
- Solve problems involving difficult arithmetic concepts such as exponents and roots other than squares and square roots and percent of increase or decrease.
- Generalize about numbers, e.g. identify the values of (x) for which an expression increases as (x) increases.
- Solve problems requiring an understanding of the properties of integers, rational numbers, etc.
- Interpret a graph in which the trends are to be expressed algebraically or in which one of the following is involved: exponents and roots other than squares and square roots, percent of increase or decrease
- Solve problems requiring insight or logical reasoning.

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